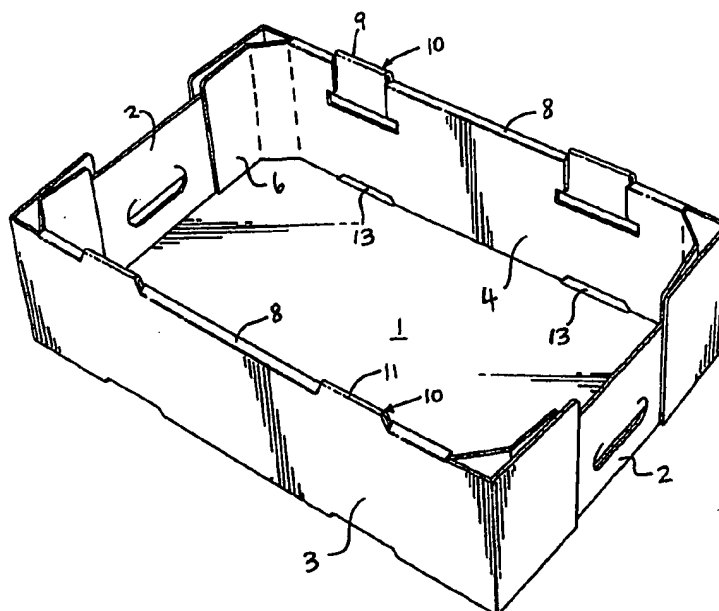




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(54) Title: TRAYS



(57) Abstract

A corrugated board tray having stacking lugs (10) on its side walls, the side walls (3, 4) being of double thickness, and the stacking lug comprising an integral upward extension of only the outer one of the side wall panels, folded over inwardly and secured to the inside of the wall.

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Trays

5 This invention relates to trays made of cardboard, corrugated board or similar lightweight foldable sheet material.

Such trays are often used for storing and transporting fresh foodstuffs such as fruit and vegetables and are then required to be stackable one upon another in stable fashion. To achieve stable stacking, i.e. reliable location of each tray against lateral movement relative to the one below it in a stack, it is known to form the tray with integral stacking lugs upstanding from the tops of its side walls, for engagement in recesses at the edge of the base of a similar tray stacked on top of it. Such a stacking lug can be a simple, single thickness, upward extension of a wall panel, but a lug of this kind is likely to bend and/or fray quite quickly during use and is therefore not satisfactory. A substantial improvement is provided by forming a stacking lug as a folded over, double thickness, integral upward extension of the respective panels of a folded over, double thickness, side wall, as in GB-A-2279331. With this arrangement however, in order to provide the necessary sheet material between the wall panels to form the stacking lug, a comparatively wide strip of sheet material has to be provided extending along the top of the wall, integrally interconnecting the wall panels. Only a small part of the length of this strip is used to create the stacking lug, and thus a substantial wastage of sheet material occurs.

According to the present invention there is provided a tray made of cardboard, corrugated board or similar lightweight foldable sheet material, having a base, a side wall, and a stacking lug extending upwardly above the top of said side wall, the side wall being of

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double thickness formed of hingedly interconnected inner and outer side wall panels, the outer one connected to the base, folded over face to face, and the stacking lug comprising an integral upward extension of only the
5 outer one of said side wall panels, folded over inwardly to be of double thickness and held to the inside of the said wall.

As such a stacking lug is integral with only the outer side wall panel it is no longer necessary to
10 provide sufficient sheet material between the panels to create it. Instead, substantially all of the material to form the lug can be taken from the inner side wall panel by releasing the lug material therefrom.

The stacking lug may be held to the inside of its
15 associated side wall in any convenient fashion, such as by gluing or stapling. In a preferred form of the invention however the stacking lug is held to the wall by having part thereof trapped between the said inner and outer wall panels. Again preferably, the lug may be
20 formed with two opposite laterally protruding wing portions which are trapped as aforesaid.

Some embodiments of the invention will now be described by way of example and with reference to the accompanying drawings in which:-

25 Figure 1 is a plan view of a blank for making a tray according to a first embodiment;

Figure 2 is a perspective view to illustrate a stage in the erection of the blank of Figure 1;

Figure 3 is a perspective view of the tray formed
30 from the blank of Figure 1;

Figure 4 is a perspective view of the same tray, with another tray according to the invention stacked on it;

Figure 5 is a plan view of a blank for making a
35 tray according to a second embodiment;

Figure 6 is a perspective view of a tray formed from the blank of Figure 5; and

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Figure 7 is a cross-section on line VII-VII of Figure 6.

Referring first to Figures 1 and 3, a blank made of double faced single flute board has its flutes running in the direction of the arrow A in the Figure. The blank comprises a base panel 1, end wall panels 2 and side wall panels 3 and 4. The latter panels are arranged to form side walls of double thickness by folding up the panel 3 at right angles to the base panel and folding in the panel 4 through 180° relative to the panel 3, about double fold lines 8, to form a double thickness side wall whose outer layer is formed by the panel 3 and whose inner layer is formed by the panel 4.

End flaps 5 are provided on each of the wall panels 3, which are glued to the outside of the end walls 2 in the erected tray. Further end flaps 6 containing fold lines 7 are provided on the wall panels 4 to provide corner reinforcements in the erected tray, again glued to the end walls 2, as seen in Figure 3.

The configuration of the side edges of the flaps 5 and 6 is such that the double thickness side walls are slightly inwardly inclined in the erected tray.

Areas of board 9 which are to be used to create stacking lugs 10 are released from each of the wall panels 4, by suitably shaped cuts. Referring now particularly to Figure 2, after the wall panels 3 have been erected relative to the base panel, the parts 9 released from the wall panels 4 are next folded down through 180° about single fold lines 11, which fold lines are located at the crests of the stacking lugs 10 in the erected tray, as seen in Figure 3. The wall panels 4 are then folded down so that they trap lateral wing portions 12 of the stacking lug parts between themselves and the wall panels 3, thus holding the stacking lug parts to the wall, again as seen in Figure 3. Slots 13 are formed at the sides of the base panel 1, to receive the stacking lugs when two trays are

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stacked.

Referring now to Figure 4, this shows a tray 14 of the kind illustrated in Figure 3, together with a further tray 15 according to the invention but of half the size of tray 14. The tray 15 is formed with stacking lugs 10 in its end walls and complementary recesses 13 for receiving the same at the ends of its base panel. As a result, one or two of the smaller trays 15 can be stacked transversely on the larger one, and further large or small trays can of course be stacked on those.

Figures 5 to 7 show a modified embodiment in which a more widely spaced pair of fold lines 16 is provided between the wall panels 3 and 4 so as to form a shelf 17 along the top of the double wall, to provide additional underneath support for a tray or trays stacked above. An additional fold line 18 is provided in the wall panel 4 so that the lower part 19 of this panel can be glued to the wall panel 3, as shown in Figure 7. The wings 12 of the stacking lug parts 19 are trapped between the panels 3 and 4, as in the previous embodiment.

Although this specification refers throughout to trays, this does not mean that the invention is only applicable to open topped container whose side walls are low relative to their horizontal dimensions. Indeed the invention is equally applicable to open topped containers with side walls of any height, even ones whose side walls are taller than they are long.

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Claims:

1. A tray made of cardboard, corrugated board or similar lightweight foldable sheet material, having a
5 base, a side wall, and a stacking lug extending upwardly above the top of said side wall, the side wall being of double thickness formed of hingedly interconnected inner and outer side wall panels, the outer one connected to the base, folded over face to face, and the stacking lug
10 comprising an integral upward extension of only the outer one of said side wall panels, folded over inwardly to be of double thickness and held to the inside of the said wall.
- 15 2. A tray as claimed in claim 1, wherein substantially all of the sheet material forming the said stacking lug is provided by being released from the inner one of said side wall panels.
- 20 3. A tray as claimed in claim 2, wherein the said stacking lug is held to the said wall by having part thereof trapped between the said inner and outer wall panels.
- 25 4. A tray as claimed in claim 3, wherein the said stacking lug is formed with two opposite laterally protruding wing portions which are trapped as aforesaid.
- 30 5. A tray as claimed in claim 1, substantially as hereinbefore described with reference to the accompanying drawings.

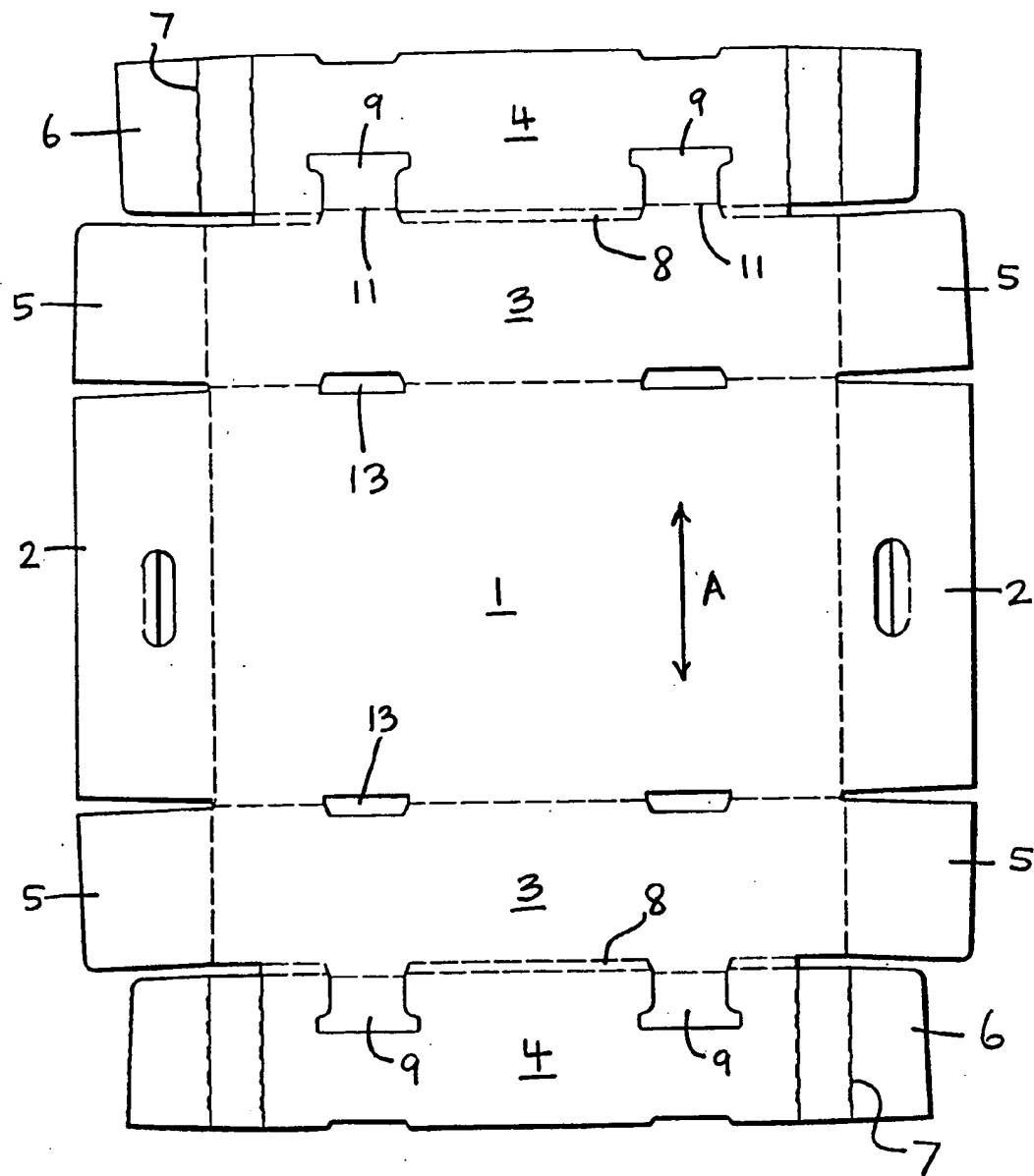
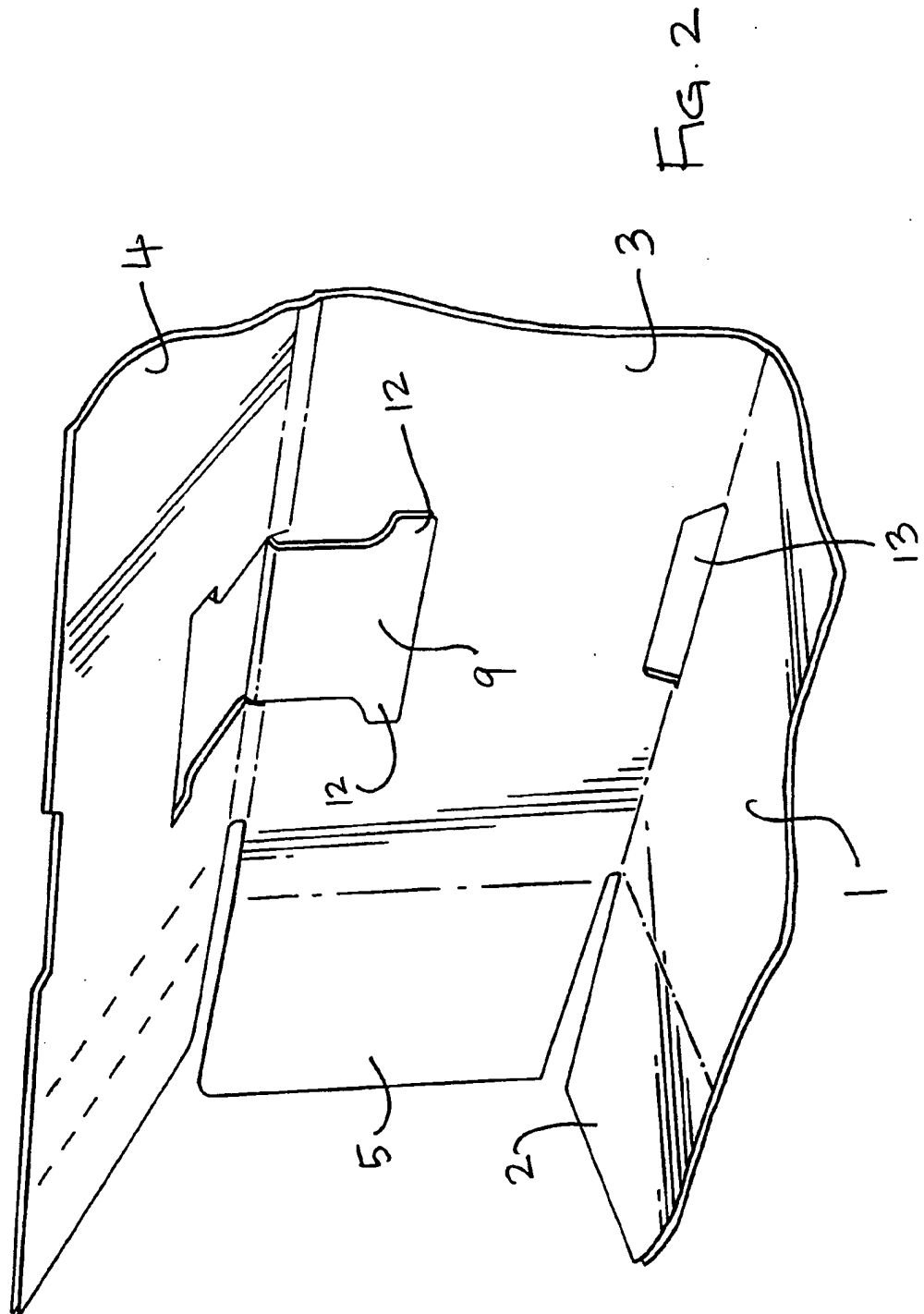


FIG. 1



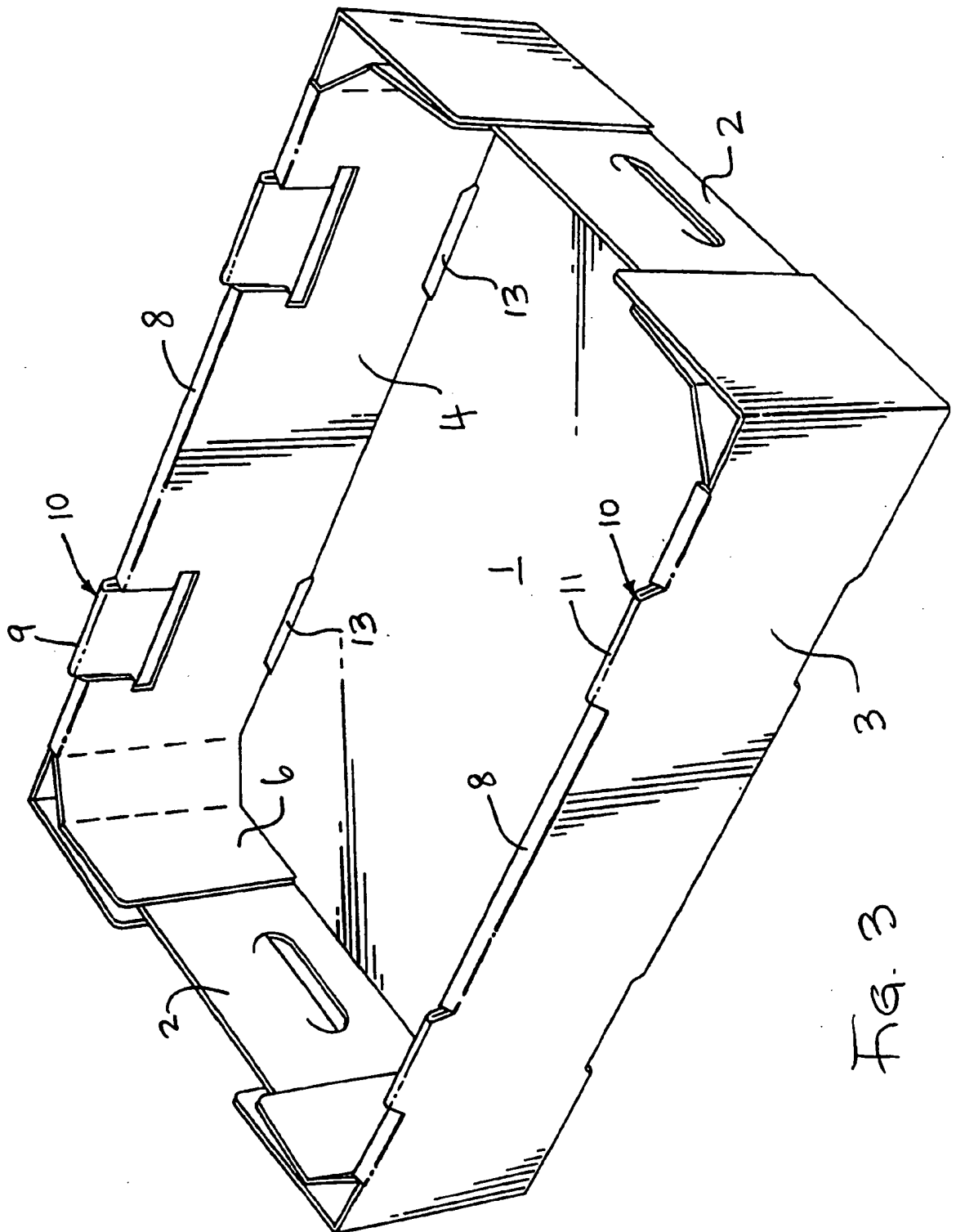


Fig. 3

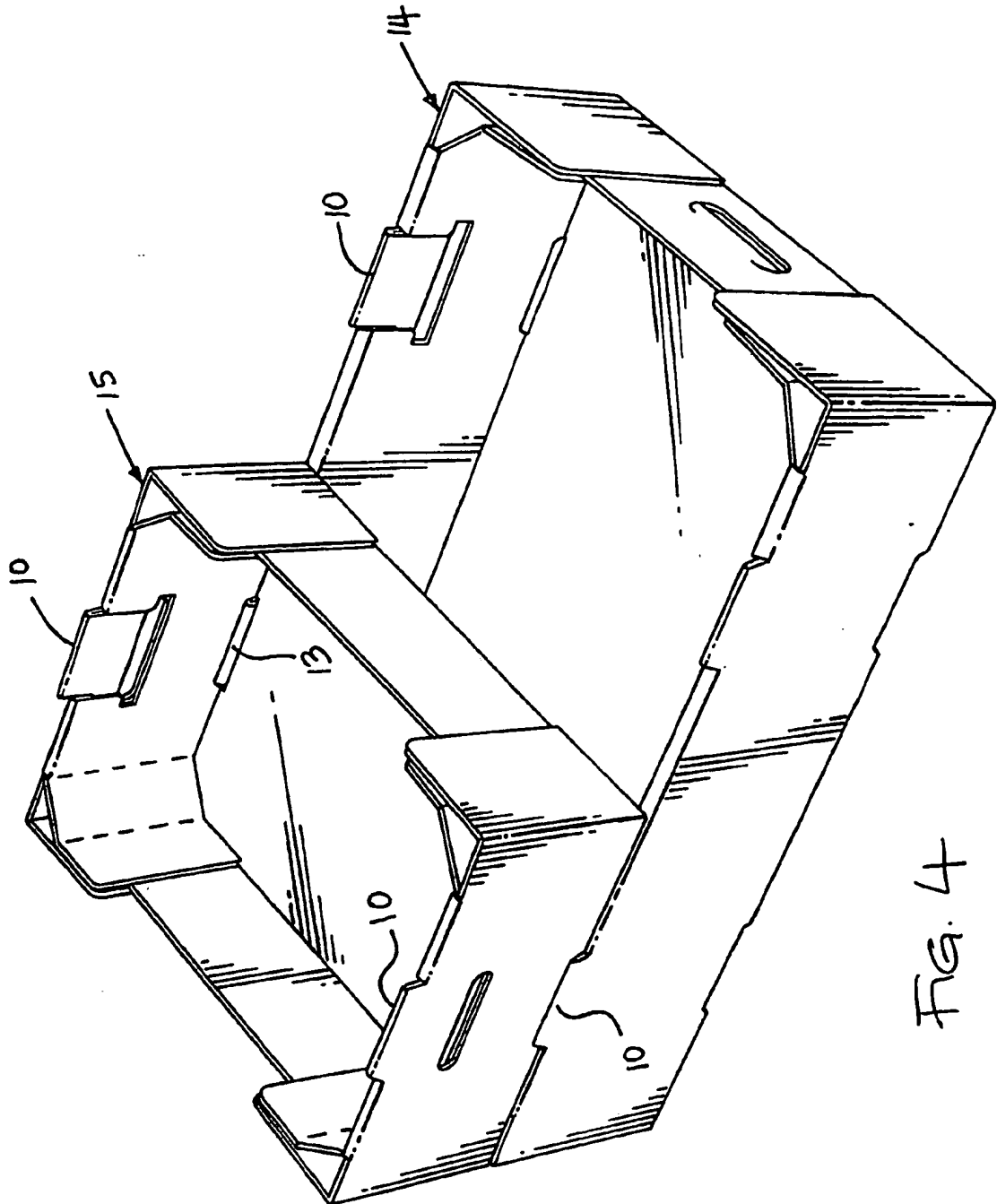


Fig. 4

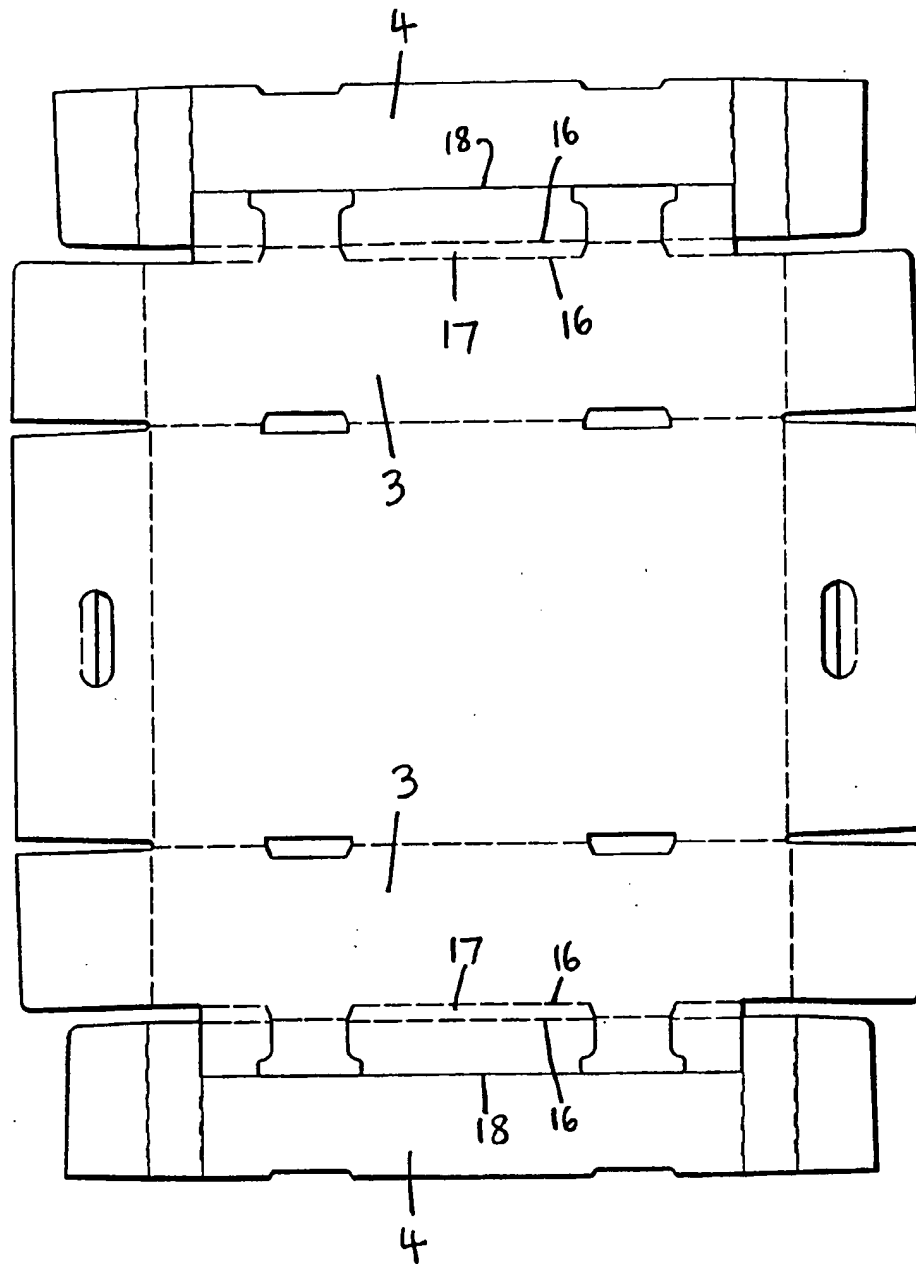


Fig. 5

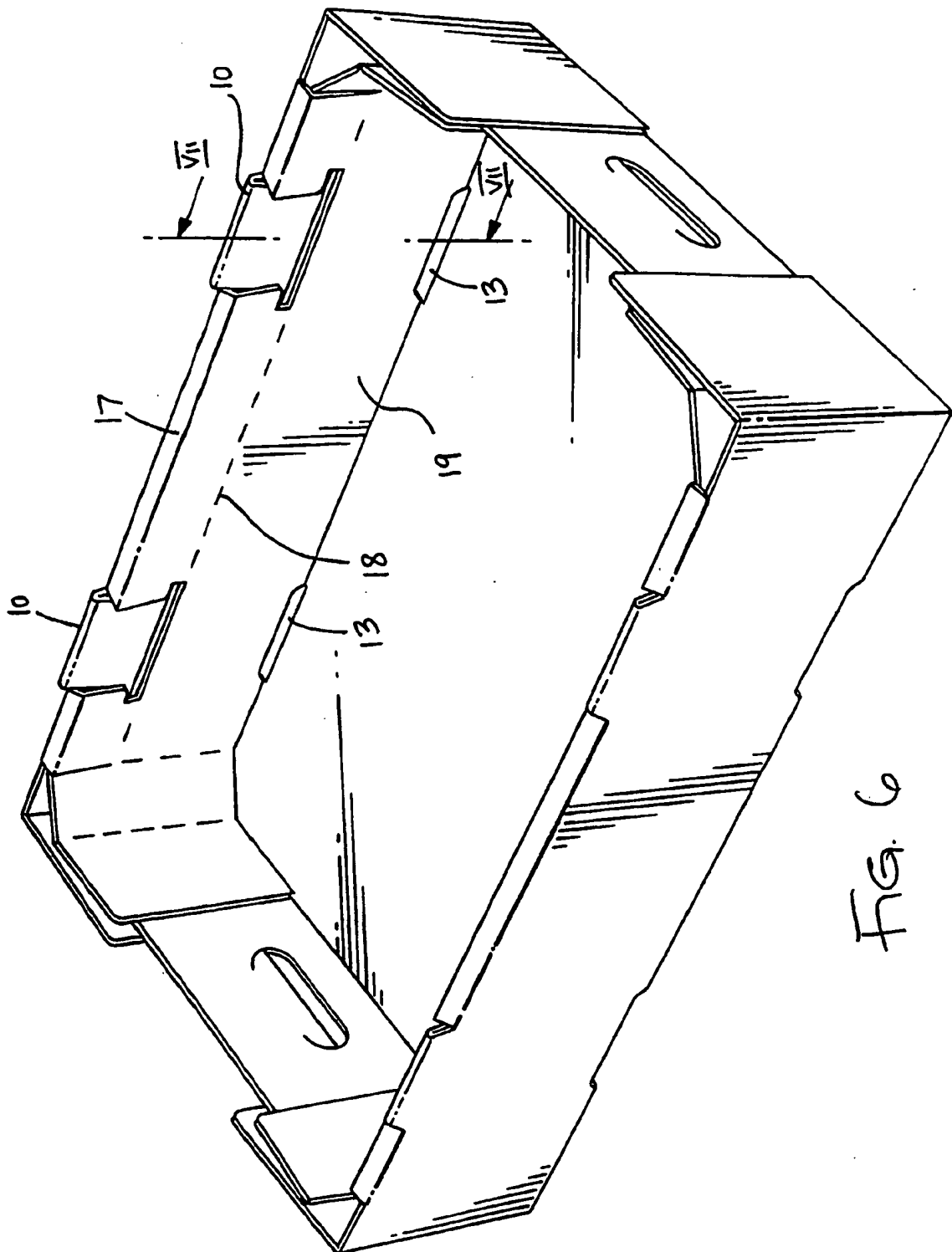


FIG. 6

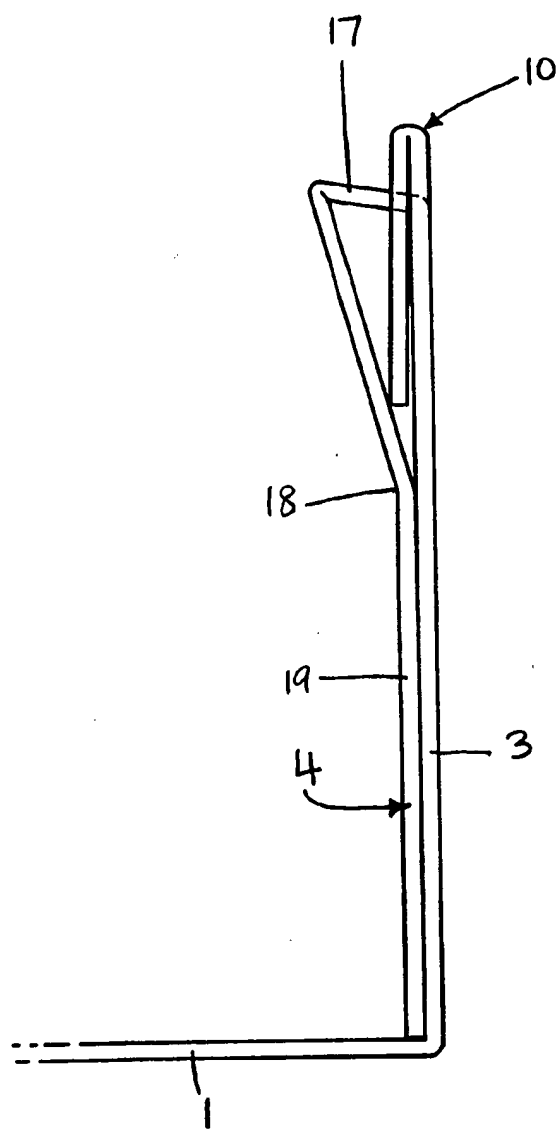


FIG. 7

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/00558

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 B65D5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 1 427 904 A (PAPETERIES DE LA HAYE-DESCARTES CARTONNERIES MENIGAULT) 28 April 1966 see page 2, left-hand column, line 12-20 see page 3, left-hand column, line 3-13; figures 1-5	1-4
X	GB 962 191 A (FABBRI) see page 2, line 97 - page 3, line 90 see page 3, line 115-122; figures 1,2	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

20 May 1999

Date of mailing of the international search report

03.06.99

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 99/00558

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

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2. ☒ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
Art. 6 PCT
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3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

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4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

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- ☐ The additional search fees were accompanied by the applicant's protest.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 1427904	A	28-04-1966	NONE
GB 962191	A		NONE